UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/591,787	07/30/2007	Kazuhiro Nagaike	59150-8037	3253

79975 7590 02/23/2011

King & Spalding LLP
P.O. Box 889
Belmont, CA 94002-0889

EXAMINER	
CHEN, STACY BROWN	
ART UNIT	PAPER NUMBER
1648	
MAIL DATE	DELIVERY MODE
02/23/2011	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/591,787	NAGAIKE ET AL.	
	Examiner	Art Unit	
	Stacy B. Chen	1648	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *31 January 2011*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1,3-40,44-62 and 66-91* is/are pending in the application.

4a) Of the above claim(s) *5,6,19-40,44-62 and 66-91* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,3,4 and 7-18* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *05 September 2006* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

1. Applicant's amendment and remarks filed January 31, 2011 are acknowledged and entered. Claims 1, 3-40, 44-62 and 66-91 are pending. Claims 5, 6, 19-40, 44-62 and 66-91 are withdrawn from consideration being drawn to non-elected embodiments. Claims 1, 3, 4 and 7-18 are under examination.

Response to Amendment

2. The rejection of claims 3, 4, 7 and 11-13 under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention, is withdrawn in view of Applicant's amendments.

Claims Summary

3. The claims are drawn to a recombinant varicella-zoster virus (VZV), also known as human herpes virus type 3, HHV-3, comprising a bacterial artificial chromosome (BAC) vector sequence that is inserted into a non-essential region of a VZV genome. The insertion is in the ORF of gene 13, a non-essential gene. Also claimed are pharmaceutical compositions and vaccines containing the recombinant VZV.

The BAC vector sequence comprises a recombinant protein dependent recombinant sequences, selected from the group consisting of a loxP site, an FRT site, an attB, an attP site and a res site. The BAC vector comprises a selectable marker (e.g., drug selectable marker, or GFP). In one embodiment, the BAC vector comprises SEQ ID NO: 7.

The VZV genome is comprises sequences from a wild type strain, an Oka vaccine strain, or a mutant type strain. The genome has mutations in gene 62 (e.g., substitution at position 2210 to G, 3100 to G, 3818 to C, 4006 to G) and gene 6 (e.g., substitution at position 5745 to G).

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1, 3, 4, 8-12, 17 and 18 remain rejected under 35 U.S.C. 102(b) as being anticipated by Horsburgh et al. (US Patent 6,277,621 B1, "Horsburgh"). The claims are summarized above. Horsburgh discloses a recombinant VZV virus comprising a BAC vector sequence (**see col. 6, lines 1-17**, col. 1, lines 50-54, 65-67; col. 3, lines 41-48; and col.10, lines 15-18). The BAC is inserted into a non-essential region of the virus genome, such as UL13 (see col. 6, lines 40-54). Selectable markers, such as drugs and GFP are suggested (see col. 11, lines 18-29; and col. 12, line 67). Horsburgh suggests that the expression system can be used to generate attenuated or mutated viruses for purposes of immunization (see col. 5, lines 4-30).

Claims 11 and 12, as amended, require the presence of sequences from a wild type strain of VZV or a mutant type strain of VZV. The way in which the claim language is stated, indicates that only some sequences from the viral strains need be present. Since there are no particular sequences identified that must be included in the VZV genomes, it is reasonable to expect that any VZV genome will meet the limitations of these claims.

Although Horsburgh does not specifically suggest that the viruses be used as pharmaceutical compositions or vaccines, note that the limitations in claims 17 and 18 do not indicate that there is any additional component to render the actual contents of the composition distinct from a composition comprising the virus. Horsburgh's viruses are expected to be in some sort of culture or medium during their production and storage, which qualifies as a composition. Although the claims call the composition "pharmaceutical compositions" and "vaccines", the only contents of those compositions are the viruses, which is what Horsburgh teaches. Therefore, the claimed subject matter is anticipated by the prior art.

Applicant's arguments have been carefully considered but fail to persuade. Applicant's substantive arguments are primarily directed to the following:

- Applicant argues that Horsburgh's teachings are directed to the reverse of the instantly claimed subject matter. Horsburgh's method involves introducing a viral genome into a BAC, as opposed to the instant method of inserting a BAC into a viral genome.
    - In response to Applicant's argument, the Office notes that what is instantly claimed is a live, attenuated recombinant VZV comprising a BAC vector sequence. The teachings of Horsburgh lead one to insert a viral sequence encoding a live, attenuated VZV, into a BAC, which results in production of **a recombinant virus including the BAC**. It appears that Applicant is focusing on the method of the production, rather than the end product.
- Applicant also argues that Horsburgh's mention of live, attenuated viruses does not rise to the level of having achieved conception of, or enabling teaching of the instantly claimed invention.

- In response, Applicant has not presented any evidence or reasoning why Horsburgh's suggestion to use the BAC constructs to produce live, attenuated viruses is not enabled. Attorney arguments cannot take the place of evidence. Horsburgh provides the method, which works for other viruses, so it is reasonable to expect that the expression of a live, attenuated virus' genome will result in a live, attenuated virus. Therefore, the invention remains rejected over the prior art.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 13, 14 and 15 remain rejected under 35 U.S.C. 103(a) as being unpatentable over Horsburgh et al. (US Patent 6,277,621 B1, "Horsburgh"), as applied to claim 1 above, and further in view of WO00/50603 (abstract, "WIPO abstract"). The claims are summarized above. Horsburgh does not disclose mutations in genes 62 and 6 as claimed. However, it appears that these mutations, particularly the mutations of gene 62 are known to be attenuating mutations of a VZV Oka strain. The WIPO abstract discloses particular mutations in gene 62 of VZV Oka strain that render the strain attenuated and useful as a vaccine. Given Horsburgh suggests that genomes of live, attenuated viruses can be expressed from the BAC construct, it would have been obvious to have used the Oka strain with its attenuating mutations. One would have been

motivated to use all of the mutations in order to ensure its safety as a vaccine. **Applicant's arguments have been carefully considered and are addressed above**.

With regard to the mutation in gene 6, the WIPO abstract does not speak to this particular mutation. The Office cannot find in the specification where this mutation came from *(i.e., Applicant's own work, further elucidation of the attenuated strain of* disclosed in the WIPO abstract, etc.). Therefore, in the interest of compact prosecution, the Office will presume that the mutation in gene 6 is inherently present in the attenuated Oka strain disclosed in the WIPO abstract. Applicant is invited to comment on this.

6. Claims 7 and 16 remain rejected under 35 U.S.C. 103(a) as being unpatentable over Horsburgh et al. (US Patent 6,277,621 B1, "Horsburgh"), as applied to claim 1 above, and further in view of Mori et al. (US Patent Application Publication 20080226677, filed May 12, 2004, "Mori"). Claim 7 is drawn to an embodiment wherein the BAC vector sequence comprises recombinant protein dependent recombinant sequence. Mori discloses the use BAC vectors to express viral genes, as well as the use of recombinant protein dependent recombinant sequences as instantly claimed (see paragraph [0102] on page 8, and paragraph [0209] on page 26, for example). Claim 16 is drawn to an embodiment wherein the BAC vector sequence comprises SEQ ID NO: 7. Although Horsburgh does not disclose this particular sequence, it would have been obvious to have used any other available BAC vector sequence, such as the sequence taught by Mori as SEQ ID NO: 401 (100% identical to Applicant's SEQ ID NO: 7). One would have had a reasonable expectation of success because Mori uses human herpesviruses (types 6 and 7) with the BAC vector sequence.

Applicant's arguments have been carefully considered but fail to persuade. Aside from the arguments relating to the Horsburgh reference which are addressed above, Applicant also argues that Mori discusses viral gene transfer using a recombinant HHV for introducing a desired gene into lymphoid cells, as opposed to the live, attenuated virus instantly claimed.

In response to applicant's arguments against the Mori reference individually, one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See In re Keller, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); In re Merck & Co., 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986).

Double Patenting

7. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., In re Berg, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); In re Goodman, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); In re Longi, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); In re Van Ornum, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); In re Vogel, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and In re Thorington, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

Claims 1, 3, 4 and 7-18 remain provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1, 4, 11-17, 24 and 25 of copending Application No. 12/094,757. Although the conflicting claims are not identical, they are not patentably distinct from each other because the claimed subject matter of the co-pending application falls within the scope of the recombinant BAC instantly claimed. This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented. In the remarks filed January 31, 2011, Applicant requests that this provisional rejection be held in abeyance until allowable subject matter is indicated.

Conclusion

8. No claim is allowed.

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a). A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply

is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Stacy B. Chen whose telephone number is 571-272-0896. The examiner can normally be reached on M-F (7:00-4:30). If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Zachariah Lucas can be reached on 571-272-0905. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

/Stacy B Chen/

Primary Examiner, Art Unit 1648